MATH M07: Precalculus and Trigonometry

Course Objectives (COR)

- Graph functions and relations in rectangular coordinates and polar coordinates.
- Synthesize results from the graphs and/or equations of functions and relations
- Apply transformations to the graphs of functions and relations.
- Recognize the relationship between functions and their inverses graphically and algebraically.
- Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities.
- Solve systems of equations and inequalities.
- Apply functions to model real world applications.
- Prove trigonometric identities.
- Identify special triangles and their related angle and side measures.
- Evaluate the trigonometric function at an angle whose measure is given in degrees and radians
- Manipulate and simplify a trigonometric expression.
- Solve trigonometric equations, triangles, and applications
- Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
- Evaluate and graph inverse trigonometric functions.
- Convert between polar and rectangular coordinates.
- Calculate powers and roots of complex numbers using DeMoivre's Theorem.
- Represent a vector (a quantity with magnitude and direction) in the form <a, b> and ai+bj, compute the magnitude of a vector, and graph vectors on the xy-plane.
- Perform vector operations including addition, subtraction, scalar multiplication, and dot product. Determine the angle between two vectors and when vectors are parallel or perpendicular, and compute the projection vector.
- Write the standard form of a circle given the general equation.
- Graph plane curves described by parametric equations.
- Find parametric forms for functions in the plane and eliminate the parameter given curves in parametric form.
- Work with sequences and series or use the binomial theorem or determine the equations of the standard conics or perform partial fraction decomposition.

Course Learning Outcomes (CLO)

- Students completing this course will be able to solve a quadratic trigonometric equation.

- Students completing this course will be able to simplify a difference quotient expression.
- Students completing this course will be able to graph a trigonometric function of the type $y=A \sin Bx + C$.
- Students completing this course will be able to solve a logarithmic equation.